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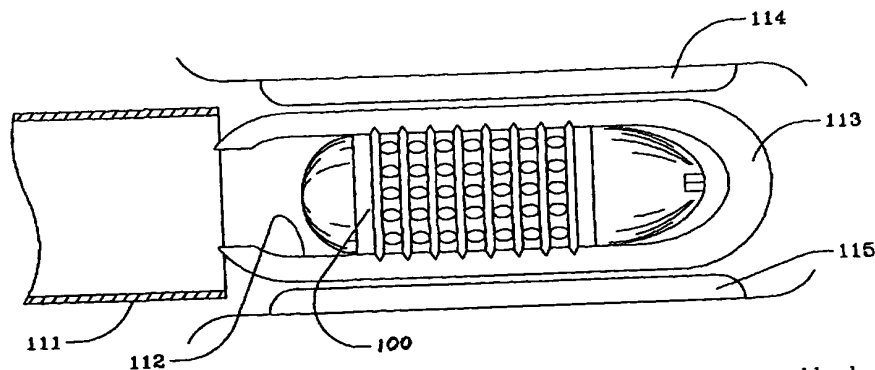
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(54) Title: DEVICES AND METHODS FOR MINIMALLY INVASIVE TREATMENT OF DEGENERATED SPINAL DISCS



WO 03/105673 A2 (57) **Abstract:** Spinal stabilization devices and their methods of insertion and use to treat degenerated lumbar, thoracic or cervical spinal discs in minimally invasive, outpatient procedures are described. In one embodiment, the spinal stabilization device is an expandable cage made of a coil or perforated cylindrical tube with a bulbous or bullet-shaped distal end and a flat or rounded proximal end. In a preferred embodiment, the spinal stabilization device is mechanically expanded to a larger diameter when a pre-determined superelastic nickel-titanium alloy which is thermally programmed to expand to a relatively larger diameter when a pre-determined transition temperature below body temperature is reached. To treat a degenerated disc, a guide wire is inserted into the disc and an endoscope is inserted through a posterolateral puncture in the back and advanced up to the facet of the spine. Mechanical tools or laser energy, under endoscopic visualization, are used to remove or vaporize a portion of the facet bone, creating an opening into the foraminal space in the spine for insertion of an endoscope, which enables the disc, vertebra and nerves to be seen. The passageway is expanded, mechanical tools or laser or RF energy are used to make a tunnel into the disc, and a delivery cannula is inserted up to the opening of the tunnel. An insertion tool is used to insert one or more spinal stabilization devices into the tunnel in the disc, preserving the mobility of the spine, while maintaining the proper space between the vertebra. Laser or radio frequency (RF) energy is used to coagulate bleeding, vaporize or remove debris and shrink the annulus of the disc to close, at least partially, the tunnel made in the disc.